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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/824,887	04/13/2004	Bhaskar Ghosh	50277-2404	7312

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SAN JOSE, CA 95110

EXAMINER
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HWA, SHYUE JIUNN

ART UNIT	PAPER NUMBER
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2169

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/12/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/824,887

Applicant(s)

GHOSH ET AL.

Examiner

James Hwa

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 16 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 7/27/2004 and 8/17/2006.

- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

1. Claims 1 -29 are pending in this office action. This action is responsive to Applicant's application filed Dec. 16, 2003.

### **Response to Preliminary Amendment**

2. The Applicant's pre-amendment, filed 13 April 2004, has been received, entered into the record, and considered.
3. As a result of the pre-amendment, claims 11-25 and 27-29 have been renumbered. Claim 26 has been cancelled.

### **Information Disclosure Statement**

4. The Applicants' Information Disclosure Statements, filed on July 27, 2004 and Aug. 17, 2006, have been received and entered into the record. Since the Information Disclosure Statements complies with the provisions of MPEP § 609, the references cited therein have been considered by the examiner. See attached forms PTO-1449.

### **Claim Rejections - 35 USC § 101**

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of the title.

5. Claims 1-29 are rejected under U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

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Though claim 1 likely falls under a statutory category of invention, it does not appear to produce a useful, concrete, and tangible result of the instructions that can be realized for the disclosed practical application as required. The program product stored on a computer-readable medium is capable of causing execution of a function or service on a grouping of instances of data objects; however, function invocation and data manipulation, per se, lacks usefulness since an executed function can simply cause a trivial setting of internal variables that is not realized by a user. Therefore, claim 1 is not patentable as set forth in MPEP 2107. With this in mind, a revision to the claim that shows a clear output could overcome this rejection.

Claims 2-29, fully incorporating the deficiencies of their respective parent claim, are likewise rejected.

### **Claim Rejections - 35 USC § 102**

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:  
A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Ratcliff (US Patent No. 6,996,548 B2, hereinafter "Ratcliff").

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7. With respect to independent claim 1, Ratcliff discloses a **database server** as originating server in element 210 of figure 2.

Ratcliff discloses **receiving at the database server the database statement** (see disclosure of receives the algorithm and the data, column 4, lines 42-44; see also elements 135 and 215 of figure 2).

Ratcliff discloses **determining that at least one operation required by the database statement can be parallelized; within the database server** (see disclosure of the algorithm is designed in a manner that lends itself to parallel processing, column 4, lines 20-35, see also element 215 of figure 2).

Ratcliff discloses **generating a set of information about how to execute the database statement** (see disclosure of information such as tasks, algorithms and/or data can be packaged in various forms for delivery, column 4, lines 56-63).

Ratcliff discloses **causing a plurality of slave processes to perform said at least one operation by sharing the set of information with each slave process of said plurality of slave processes, wherein the set of information shared with each slave process** (see disclosure of standardize certain object definitions and interfaces to permit the sharing of such objects with one another, column 5, lines 15-20, see also element 300 of figure 3).

Ratcliff discloses **information about a task to be performed by said slave process** (see disclosure of originating server distributed algorithms and/or algorithm portions to respective processors, column 7, lines 49-51, see also figure 3, elements 105-130, e.g. slaves).

Ratcliff discloses **information about one or more tasks, to be performed by processes other than the slave process, to execute the database statement** (see disclosure of a second algorithm portion different from the first algorithm portion, column 7, lines 43-58, see also figure 3).

Ratcliff discloses **sending to each slave process of said plurality of slave processes data that indicates which part of the at least one operation should be performed by the slave process** (see disclosure of procedures are parts of a program that cause the computer to actually do something, e.g. the parts of a program that perform calculations or the part of a program, column 4, lines 64-67).

8. With respect to independent claim 2, Ratcliff discloses **sharing the set of information includes sharing an execution plan for the database statement** Ratcliff discloses (see disclosure of interfaces to permit the sharing of such objects with one another, column 5, lines 15-20).

Ratcliff discloses **sharing the execution plan with a particular slave process of the plurality of slave processes** (see disclosure of parallel data processing system shares many of the features of system and has additional features, column 7, lines 46-51).

Ratcliff discloses **providing an original statement of the database statement to a node on which the particular slave process resides, wherein the original statement is the form of the database statement in which the database statement was received by the database server** (see disclosure of the reward server provides a reward to a recipient 325 associated with a

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particular processor, column 7, line 66-67, see also elements 320 and 105 of figure 3).

Ratcliff discloses **at said node, generating an equivalent execution plan based on the original statement; and the particular slave process accessing the equivalent execution plan** (see disclosure of the result set is sent to originating server after assembly by result collation server, column 6, line 65 to column 7, line 8, see also elements 210, 215 and 220 of figure 2).

9. With respect to independent claim 3, Ratcliff discloses **providing to the node additional information that includes at least one of values associated with session parameters of a database session in which the database statement was received** (see disclosure of the user is presented with several options such as weekly payments, e.g. values, column 8, lines 31-39).

Ratcliff discloses **values associated with optimizer parameters that were used by an optimizer to generate a plan for the database statement in a node other than said node** (see disclosure of the algorithm is comprised of a plurality of sub-algorithms, each of which can be processed independently for optimize, column 4, lines 23-26, see also element 135 of figure 3).

Ratcliff discloses **generating an equivalent execution plan is performed based, at least in part, on the additional information** (see disclosure of after selecting the desired reward option, an agreement is entered into between the user and an entity associated with the originating server, column 8, lines 39-47).

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10. Regarding claims 15-17 are rejected under 35 U.S.C 102(e), the limitations therein have substantially the same scope as claims 1-3.

### **Claim Rejections - 35 USC § 103**

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

11. Claims 4-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ratcliff (US Patent No. 6,996,548 B2) as applied to claim 1 above, and further in view of Hallmark et al. (US Patent No. 5,857,180, hereinafter, "Hallmark").



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12. With respect to claims 4 and 5, although Ratcliff substantially teaches the claimed invention, Ratcliff fails to adequately disclose sending to each slave process data that indicates a specific portion of the execution plan that is to be performed by the slave process and determining how to execute the particular portion based.

Hallmark discloses **generating a set of information includes generating an execution plan for the database statement, wherein the set of information includes the execution plan** (see disclosure of an optimal plan for execution of SQL statement is generated, column 5, line 66 to column 6, line 5; see also element 216 of figure 2).

Hallmark further discloses **the step of sending to each slave process of said plurality of slave processes data that indicates which part of the at least one operation should be performed by the slave process includes sending to each slave process data that indicates a specific portion of the execution plan that is to be performed by the slave process** (see disclosure of each node in the row source tree is annotated with parallel data flow information, column 3, lines 38-43).

Hallmark discloses **sending to a particular slave process data that indicates a particular portion of the execution plan that is to be performed by the particular process; and the method further includes the step of the particular slave process** (see disclosure of processes on each system can only process the data resident on its on system, and cannot be used to share the processing load at other systems, column 7, lines 33-36).

Hallmark discloses **determining how to execute the particular portion based, at least in part, on characteristics of the execution plan other than the particular portion of the plan that is to be executed by the particular slave process** (see disclosure of the execution plan is examined, from the bottom up, to determine those portions of the plan that can be parallelized, column 9, lines 5-13).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Ratcliff and Hallmark before him/her, to modify Ratcliff to indicate which part of the operation should be performed by the slave process using the Hallmark concept because that would allow Ratcliff the ability to dynamically partition row sources for parallel processing as taught by Hallmark (column 2, lines 26-27).

13. With respect to claims 6-8, although Ratcliff substantially teaches the claimed invention, Ratcliff fails to explicitly disclose constructing a shared cursor for the database statement and providing each slave process of said plurality of slave processes access to the shared cursor.

Hallmark discloses **constructing a shared cursor for the database statement, wherein the shared cursor provides access to the execution plan; and the step of sharing access includes providing each slave process of said plurality of slave processes access to the shared cursor** (see disclosure of a process flow for a slave Data Flow Operators (DFO) processing a parse message, a database cursor is opened for each DFO, column 26, lines 30-40; see also element 720 of figure 7B).

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Hallmark discloses allowing two or more of said slave processes to access a shared instance of the shared cursor (see disclosure at block 740 of figure 7C, when Query Coordinator does not expect a ready replies, processing continues to fetch all rows from the DFO cursor until processing ends, column 26, lines 57-67; see also element 742 of figure 7C).

Hallmark discloses **allowing one of the slave processes to access a first instance of the shared cursor and allowing another one of the slave processes to access a second instance of the shared cursor** (see disclosure of processes bind variables and executes the cursor and processing continues based on if or if not that the first execution of the parallelizer, column 26, lines 57-58 and column 17, line 40-47; see also diagram 736 of figure 7C).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Ratcliff and Hallmark before him/her, to modify Ratcliff to incorporate slave processes to access a shared instance of the shared cursor using the Hallmark concept because that would allow Ratcliff to provide the ability to break up the scan such that more than one process can perform the table scan as taught by Hallmark (column 1, lines 23-25).

14. With respect to claims 9 and 10, although Ratcliff substantially teaches the claimed invention, Ratcliff fails to adequately disclose first node share access to said first instance of said shared cursor and second node share access to said second instance of said shared cursor.

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Hallmark discloses **the one slave process resides on a first node; the other slave process resides on a second node; and the first node is a different node than said second node** (see disclosure of the parallelizer traverses the DFO tree, using the DFO tree pointers, to find the next node, column 17, line 65 to column 18 line 10, see also element 1502 of figure 15).

Hallmark discloses **a first plurality of slave processes on said first node share access to said first instance of said shared cursor and a second plurality of slave processes on said second node share access to said second instance of said shared cursor** (see disclosure of block 736 processes bind variables, and executes the cursor, column 26, lines 57-62; see also block 736 of figure 7C).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Ratcliff and Hallmark before him/her, to modify Ratcliff to indicate which part of the at least one operation should be performed by the slave process using the Hallmark concept because that would allow Ratcliff the ability to dynamically partition row sources for parallel processing as taught by Hallmark (column 2, lines 26-27).

15. With respect to claims 11-14, although Ratcliff substantially teaches the claimed invention, Ratcliff fails to adequately disclose the step of inserting into the execution plan a parallelizer row source that encapsulates the scheduling of tasks that slave processes are to perform.

Hallmark discloses **the step of inserting into the execution plan a granule iterator row source** (see disclosure of a row source is implemented as

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an iterator, column 5, lines 26-29). Hallmark further discloses **encapsulates a horizontal partitioning of a base object upon which the database statement operates** (see disclosure of a table queue encapsulates the data flow and partitioning functions, column 10, lines 39-46).

Hallmark discloses **the step of generating a set of information includes generating an execution plan for the database statement, wherein the set of information includes the execution plan** (see disclosure at compilation time, a sequential query execution plan is generated, column 9, lines 5-13).

Hallmark discloses **the step of inserting into the execution plan at least one distribution row source that specifies how data is to be redistributed between one of a first slave set and a query coordinator; and a first slave set and a second slave set** (see disclosure of the ability to dynamically partition using any performance optimization techniques and from the results of the sampling, even distributions of the rows can be identified, these distributions can be used to load balance a sort between multiple processes , column 8, lines 38-45).

Hallmark discloses **inserting into the execution plan at least one sender-side distribution row source that indicates how sending processes are to distribute data that the sending processes produce; and inserting into the execution plan at least one receiver-side distribution row source that indicates how receiving processes are to obtain data that the receiving processes are to consume** (see disclosure of a table queue row source is a mechanism for partitioning and transporting rows between sets of processes and

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uses bit vector to monitor whether each consumer process received any rows from any producer slaves (column 3, lines 61-62 and column 4, lines 8-19).

Hallmark discloses **the step of inserting into the execution plan a parallelizer row source that encapsulates the scheduling of tasks that slave processes are to perform** (see disclosure of the parallelizer row source implements the parallel data flow scheduler and in general, row sources are encapsulated, column 15, lines 24-34).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Ratcliff and Hallmark before him/her, to modify Ratcliff to indicate which part of the at least one operation should be performed by the slave process using the Hallmark concept because that would allow Ratcliff the ability to dynamically partition row sources for parallel processing as taught by Hallmark (column 2, lines 26-27).

16. Regarding claims 18-25 and 27-29 are rejected under 35 U.S.C 103(a), the limitations therein have substantially the same scope as claims 4-14.

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hallmark et al. (U.S. Patent 5,857,180) implements parallel processing in a database management system.

Lohman et al. (U.S. Patent 6,112,198) optimized using parallel optimization techniques.

Carlson et al. (U.S. Patent 6,910,032) apparatus utilize dynamically populated query buffer.

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Cruanes et al. (U.S. Patent 6,954,776) techniques are provided for increasing degree of parallelism without incurring overhead.

Cruanes et al. (U.S. Patent 7,020,661) techniques for eliminating one or more portions of a data object.

Chen et al. (U.S. Patent 7,089,356) a method described parallel processing of sequence operations.

Jalan et al. (U.S. Patent Application 2004/0172626) providing system and methods for executing a sequential in parallel.

Cruanes et al. (U.S. Patent Application 2005/0131890) communication external expressions using a parallel single cursor model.

### **Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Hwa whose telephone number is 571-270-1285.

The examiner can normally be reached on 8:00 – 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christian Chace can be reached on 571-272-4190. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information

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JH

Feb./7/007

James Hwa  
Examiner  
Art Unit 2169

  
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13 February 2007